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I, KAY WARD, TEAM LEADER EXAMINATION SUPPORT AND SALES hereby certify that annexed is a true copy of the Provisional specification in connection with Application No. PQ1806 for a patent by BODYONLINE PTY LTD filed on 23 July 1999.

I further certify that the name of the applicant has been amended to BODY ON LINE PTY LIMITED pursuant to the provisions of Section 104 of the Patents Act 1990.



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First day of August 2000

*K Ward*

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PROVISIONAL SPECIFICATION



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Invention Title:

Displaying medical images and effects of disease and/or drugs.

The invention is described in the following statement:

## DISPLAYING MEDICAL IMAGES AND EFFECTS OF DISEASE AND/OR DRUGS

### Background of the Invention

5 The present invention relates to a method, apparatus, system and software for displaying visual images of body parts/systems, and the effects of disease and/or medications thereon. In particular, the present invention relates to displaying three-dimensional images of the human body, organs, limbs or other parts thereof, whereby such images may be viewed from any desired angle direction, magnification, cross-section or other view point.

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The present invention also relates to provision of the aforementioned features in conjunction with an integrated computerised information and business system for medical practitioners and/or like professional persons, facilitating access to various databases and software such as drug, research, business and other databases.

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### Description of the Prior Art

Presently, following diagnosis of a medical condition by a medical practitioner, the practitioner seeks to explain to the patient the nature and extent of the disease, and the affect of drugs, surgery or other treatment thereon. The practitioner typically reverts to published  
20 documentation, including textbooks, brochures, etc., or to a model of the human body or of a particular organ, limb or other body part, to assist in such explanation.

Difficult medical concepts can, of course, be quite complex in nature for the medical practitioner to explain, and, are not readily understood by the patient.

25

As such, a need exists for an effective communication facility to assist medical practitioners in explaining such medical concepts to their patients.

Notwithstanding the aforementioned problem, medical practitioners are additionally required  
30 to maintain a vast and up-to-date knowledge of information, including the latest advances in

- 2 -

treatment procedures and techniques, drugs, research data, specialist details, etc. Furthermore, they typically also need to maintain business knowledge including documentation and information, such as practice management, patient records, appointments, daily schedules, banking, travel, taxation, etc.

5

As such, there exists a further need for an integrated system for provision of such information in an economic and readily usable format.

### Summary of the Invention

- 10 The present invention seeks to overcome the disadvantages of the prior art by providing a system for displaying visual images of a person, a person's organs, limbs or other bodily parts, and for displaying such images, in a three-dimensional simulated format, together with the effects of disease and/or medications thereon.
- 15 The present invention also seeks to provide such a visual imaging system in conjunction with a fully integrated information and business system to assist in other aspects of a medical or like professional practice.

In one broad form, the present invention provides a system for displaying visual images of  
20 body parts and functions.

Preferably, the system displays visual images of the effect of disease and/or medications on body parts and functions.

- 25 Also preferably, said images are three-dimensional simulations, and may be viewed from any selected direction, angle, cross-section or other view point.

In a preferred form, said system further includes readable and/or audio messages associated with said visual images.

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- 3 -

In a further broad form, the present invention provides an apparatus for displaying simulated visual images of the human body or a part thereof and the effect of disease and/or medications thereon, including a computer having a processor, input means, display means, and data storage means to provide data representative of visual images of the human body or a part thereof, and, to provide data representative of the effect of disease and/or medications on said human body or parts thereof, wherein, in response to input data entered by an operator into said input means, said processor, utilising data from said data storage means, formulates and displays simulated visual images of the effects of diseases and/or drugs on said human body or part thereof on said display means.

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In this preferred form said apparatus further comprises a modem or network link whereby said data storage means is provided at a remote location.

In a further broad form, the present invention provides a method of providing a visual image of body part or function, including the steps of:

- displaying a visual image or a selected body part on a display device;
- inputting, via an input means, details of disease and/or medications to be applied to said living being or part thereof;
- processing said inputted information using a processor, and utilising a database representing disease and/or medication data including its effects on a body part or function;
- displaying on said display device a visual image of selected body part illustrating the effect of said applied disease and/or medication.

Preferably, the method further comprises the step of:

- selecting a direction, angle, magnification, cross-section or other viewpoint from which said visual image is viewed.

In yet a further broad form, the present invention provides a system for providing an integrated professional hardware/software package, for a medical practitioner or like professional person including one or more databases and/or software of medication listings,

prescription software, Medicare processing, hospitals on-line, daily medical bulletins, specialists, research data, educational institutions, on-line publications, on-line banking, practice management advice, patient records, appointments, daily schedules, medical conferences, travel bookings, and/or taxation advice, etc.

5

Preferably, the system includes hardware and software includes a PC, laptop, palmtop or other computer, together with accessories such as printers, modems, etc., and relevant software.

#### 10 Brief Description of the Drawings

The present invention will become more fully understood from the following detailed description of a preferred but non-limiting embodiment thereof, described in connection with the accompanying drawings, wherein:

Fig. 1 illustrates a block diagram representation of the main components of a preferred but  
15 non-limiting embodiment of the present invention; and,

Fig. 2 illustrates typical images, whereby the effect of disease and/or medications thereon can be displayed, and the images are capable of being viewed from different selected directions, angles, cross-sections or other view points, and also showing other screen images of various business and other functions of the system of the present invention.

20

#### Detailed Description of Preferred Embodiments

The system illustrated in Fig. 1 includes a plurality of hardware and software components of the invention when used in a medical practitioner's practice. The system may be an autonomous PC or like independent system having the various databases, software, etc.,  
25 stored in memory, and/or, via a modem or other network connection, the various databases may be provided remotely from the medical practitioner's computer. Fig. 1 illustrates a system whereby the databases are remotely provided, for example, via a modem and database interface to one of a plurality of similar PCS, each provided in a medical practitioner's surgery. In each surgery, a personal computer, input means such as a keypad and mouse, and  
30 display means such as a computer monitor and printer are typically provided. The computer



- 5 -

would be suitable for performing any typical function of a personal computer, such as word processing, storage of patient records, and formatting of appointments and daily schedules, etc. The computer may additionally be interfaced to conventional on-line facilities such as banking, hospitals, pharmacies, travel agencies, and like business functions. In addition to  
5 such capabilities, the system illustrated in Fig. 1 additionally incorporates software and databases which are unique to the present invention, to enable visual images of the human body, individual organs, limbs, or other parts thereof, to be displayed on the computer display in the medical practitioner's surgery. The software and such databases may be stored in the memory devices of the computer and/or may be accessed via a network or modem  
10 connection.

Such images, in accordance with the present invention, are displayed in a three-dimensional format, and may be viewed as selected from any desired direction, angle, magnification or viewpoint.

15

For example, for a doctor to illustrate to a patient the effect of a cataract on an eye, the progressive growth of the cataract over the cornea of the eye may be illustrated in a three-dimensional simulated format. The images may be viewed from any desired external angle, and also, from internally, to display to the patient the gradual loss of sight that might  
20 typically be experienced during the progressive development of the cataract. Then, similar images may be displayed showing the treatment or surgical procedures which may be performed on the patient. For example, the removal of the cataract from the cornea may be described and illustrated in a three-dimensional representation. In addition, or in alternative thereto, the effects of drugs, may further be illustrated. Therefore, drugs used to slow the  
25 growth of a disease, reverse the effect of the disease, or otherwise control or treat of the disease, may be displayed.

It will therefore be appreciated that such a system enables a medical practitioner to more clearly and simply explain difficult medical concepts to their patient in a manner which is  
30 likely to be more readily understood. The doctor, may electronically manipulate, rotate and

"walk through" the body images with the patient to very accurately explain the organs and other body functions.

An additional feature which may be considered useful to be used with the present invention  
5 is the provision of textual information to assist in the explanation of the images. Such textual information and labelling on the images may be preferably provided in any desired language. The information may typically incorporate treatment procedures, etc., and may be printed in a "fact sheet" format and provided to the patient for further referral and study.

10 As hereinbefore mentioned, such a system may further be provided with a number of additional interfaces to enable the medical practitioner to connect to various other commercial databases, enabling a fully integrated medical and/or business system to be implemented. For example, the doctor may identify prescription medication from various drug databases such as MIMS, transmit prescriptions to pharmacies, transmit processing of Medicare type  
15 operations, connect to hospitals, receive periodical medical bulletins, select database of specialists, identify up-to-date research data, connect to educational institutions, access on-line publications, perform on-line banking, receiving practice management advice, travel information, taxation advice, etc. The various databases can be considered to be a "virtual bookshop", allowing access to relevant industry material to, in effect, provide the doctor with  
20 an electronic version of the printed matter traditionally used in the daily operation of the medical practice.

In addition, the medical practitioner may be able to manipulate confidential and/or publicly available patient records, and transmit patient information, x-rays and other images to other  
25 doctors, hospitals, etc., and/or perform tele-conferencing.

In a further embodiment, members of the public may be permitted to access a public web-site, which might typically contain local doctor's surgery information including surgery hours, specialities, language spoken, plus a variety of self-help information services in areas such  
30 as poisons, services directory, basic first-aid, spider identification, etc.

- 7 -

In addition to various databases provided for access by the doctor, in a further embodiment, the present invention may be extended to enable patients to access at least particular parts of the various databases. For example, databases such as Mother.Connect, Baby.Connect and Aged.Connect may be useful for providing specialised on-line or CD Rom information to

5 mothers in pregnancy, new mothers, or senior persons, respectively. For example, in the case of Mother.Connect, a mother might typically have access to databases to provide 3D animations of the various stages of an embryo from conception to birth, the birth process, 3D animations of the maternity ward, details of the unborn child, nutrition issues, community support information, product catalogues, family issues, jpegs of ultrasounds, mpegs of

10 ultrasounds, and even details of selecting a name. Baby.Connect could typically deal with issues for the mother, father and the new baby, including 3D animation of the development of the baby in early years, bathing, clothing sleeping, SIDS, breastfeeding, diet and nutrition, healthy family, etc., help and support groups and crisis help. This database could further include details of immunisation calendars, early learning years, 3D dental development,

15 health and well-being, emergency procedures, and a product catalogue. Aged.Connect could typically include issues such as health and fitness, financial information, security in the home, friendship and knowledge, and could incorporate medical data on aged health issues, including early signs of heart conditions, early signs of dementia, etc.

20 It will be appreciated by persons skilled in the art that the present invention provides a unique computer software and database system, apparatus and method which provides not only a fully integrated professional information and business system to the medical practitioner in a format which is not previously known, but also, provides a unique feature in the imaging aspect in ensuring that a patient fully understands a particular medical condition or treatment

25 regime. Whilst the present invention is seen to be particularly useful as post-diagnostic tool to describe and communicate, a diagnosis to the patient in a simple and accurate manner, it may further be useful to provide educative material to doctors and assist in the diagnosis of a patient's medical condition.

- 8 -

It will be appreciate that numerous variations and modifications may be enacted to the present invention. For example, whilst the embodiment described has illustrated an application of the invention for medical practitioners, the invention may be readily adapted to other professional persons, for example, veterinarians, dentists, etc. Furthermore, it may be  
5 adapted to any engineer, tradesperson, or the like whereby alterations are usefully demonstrated to a lay person. All such variations and modifications should be considered to fall within the spirit and scope of the present invention as broadly hereinbefore described.

DATED this 23rd day of July, 1999

10

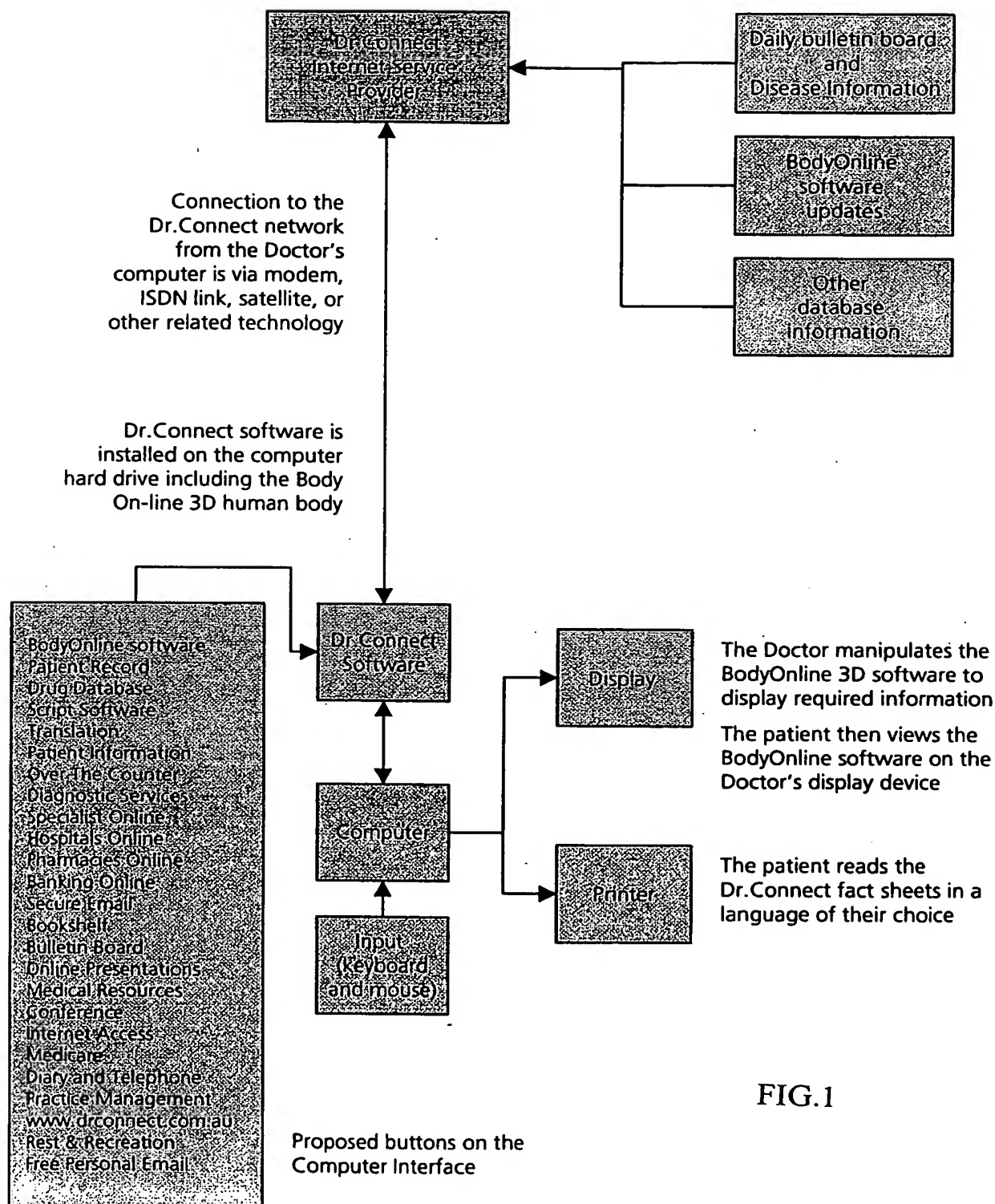
~~BODYONLINE PTY LTD~~ Body On Line Pty Limited

By Their Patent Attorneys

DAVIES COLLISON CAVE



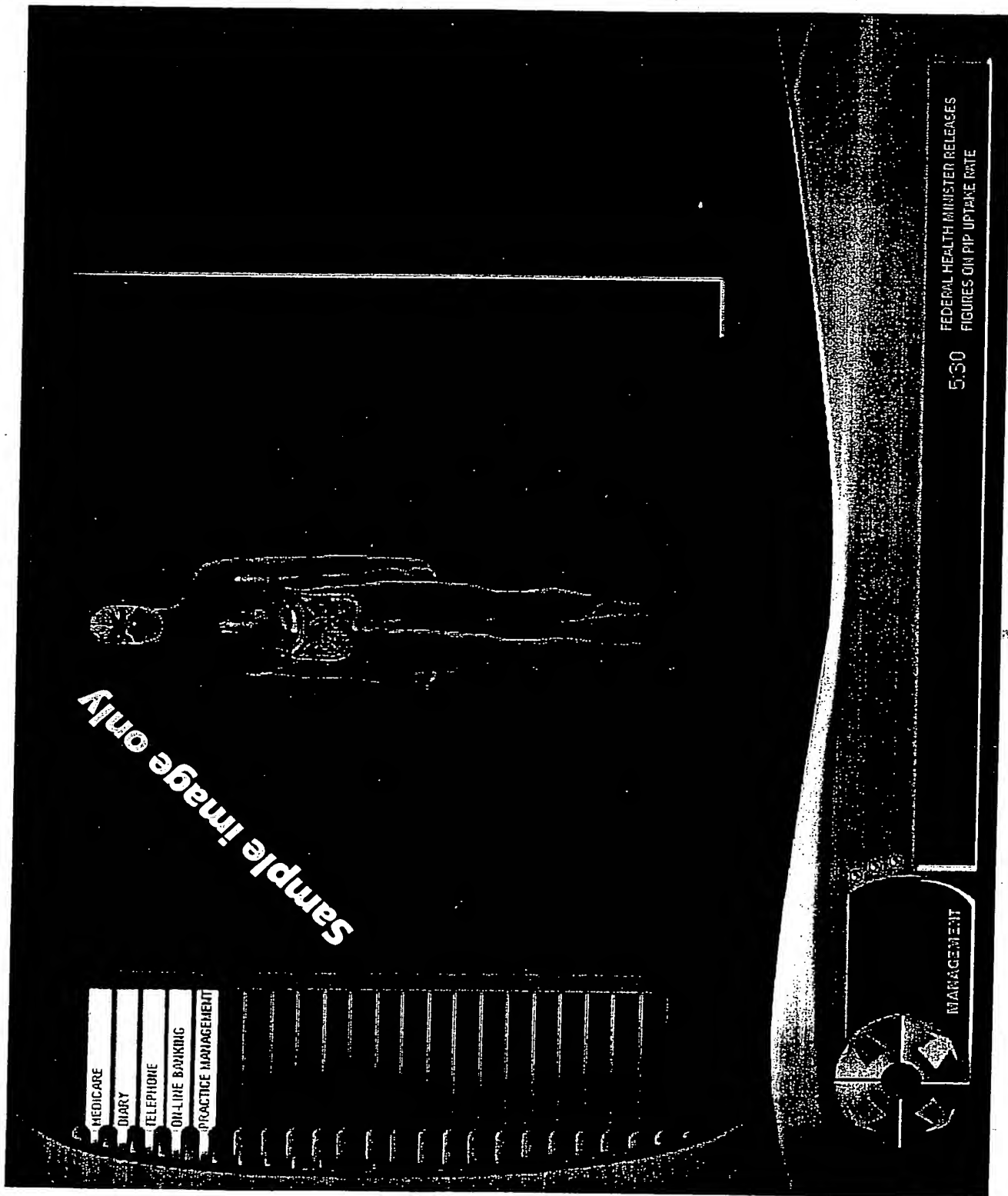
# The Dr.Connect System Overview



# Dr.Connect Interface

## Screen Shots of 'Management' Buttons

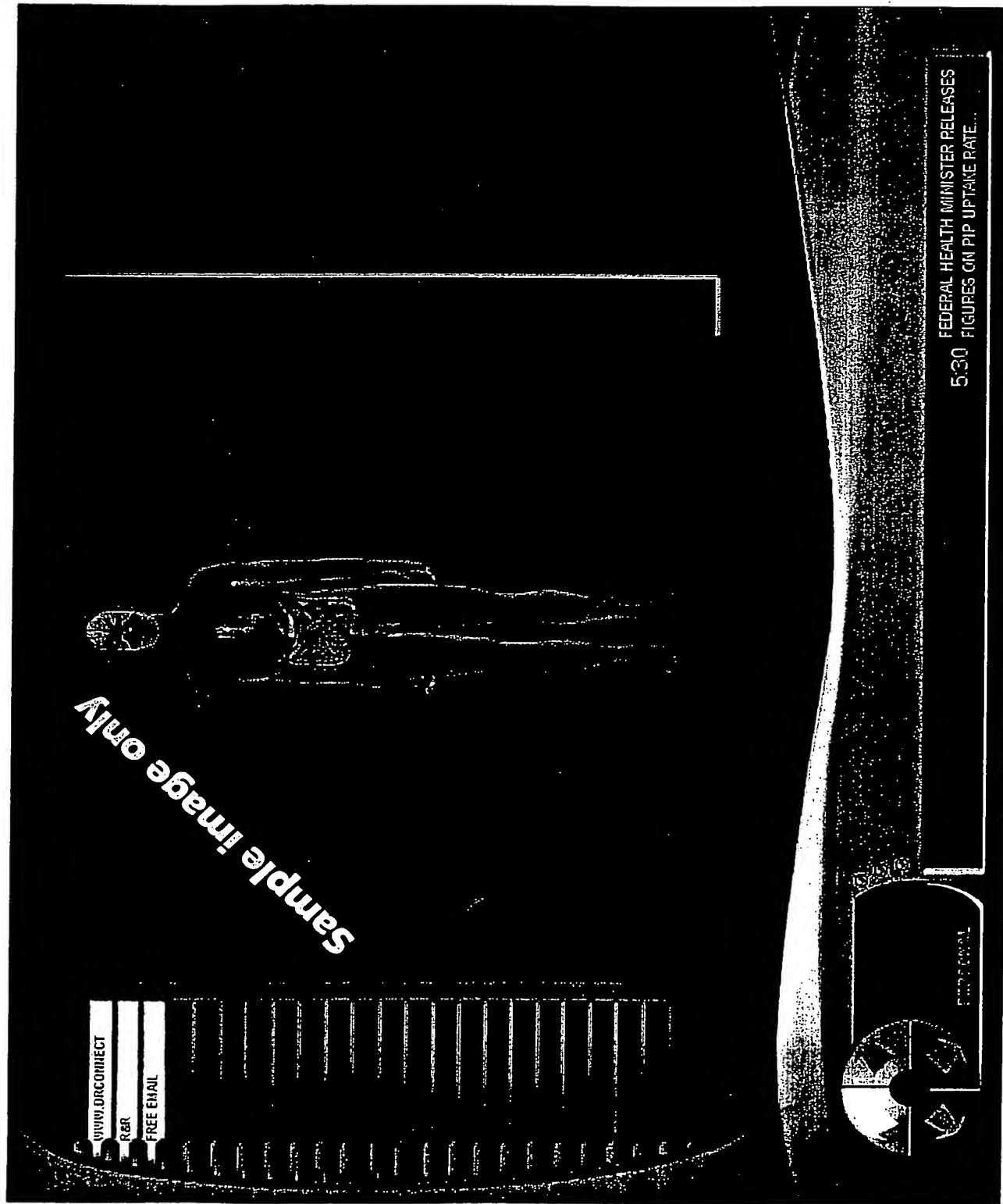
FIG. 2(a)



# Dr.Connect Interface

## Screen Shots of 'Personal' Buttons

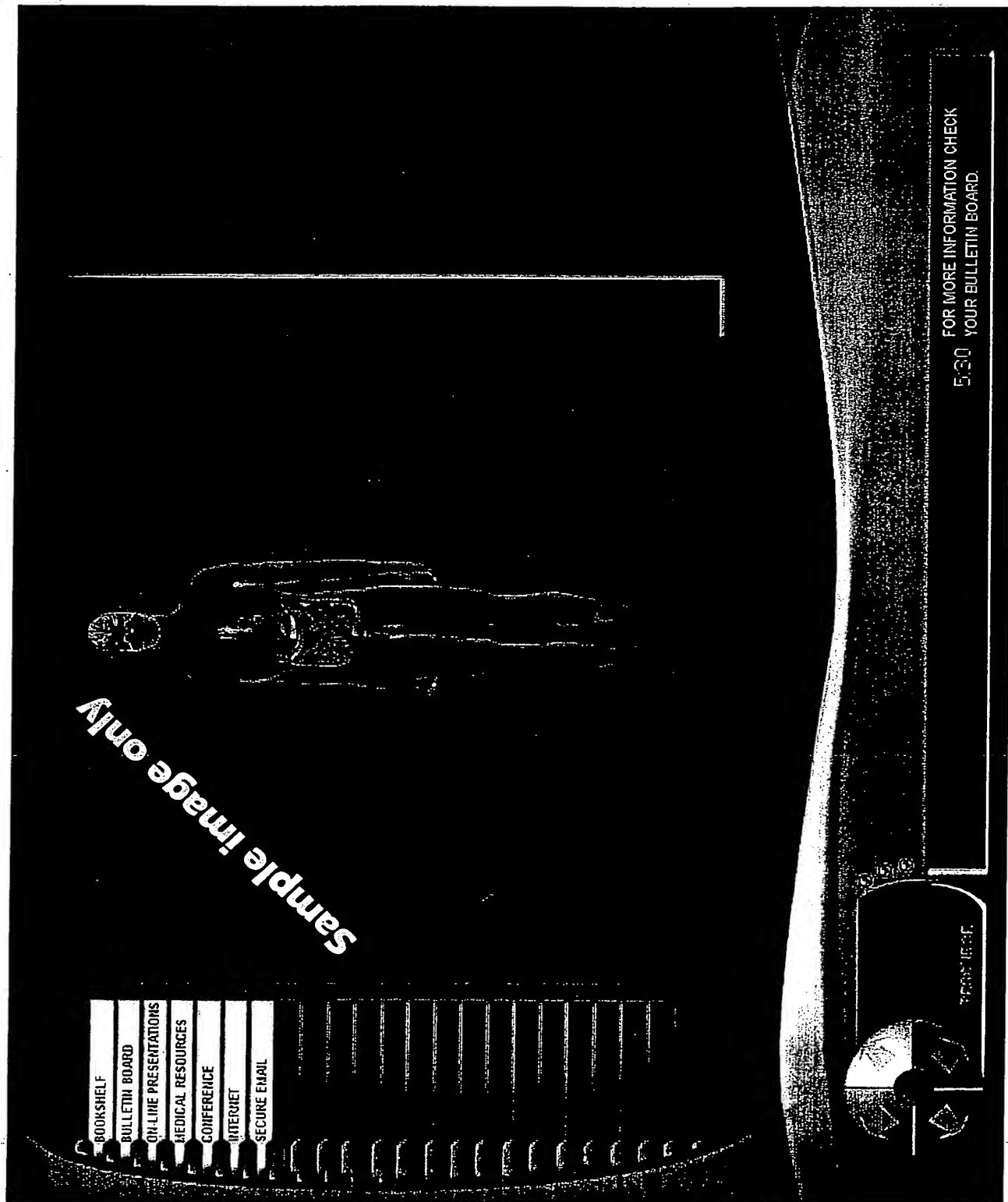
FIG. 2(b)



# Dr.Connect Interface

## Screen Shots of 'Resource' Buttons

FIG. 2(c)

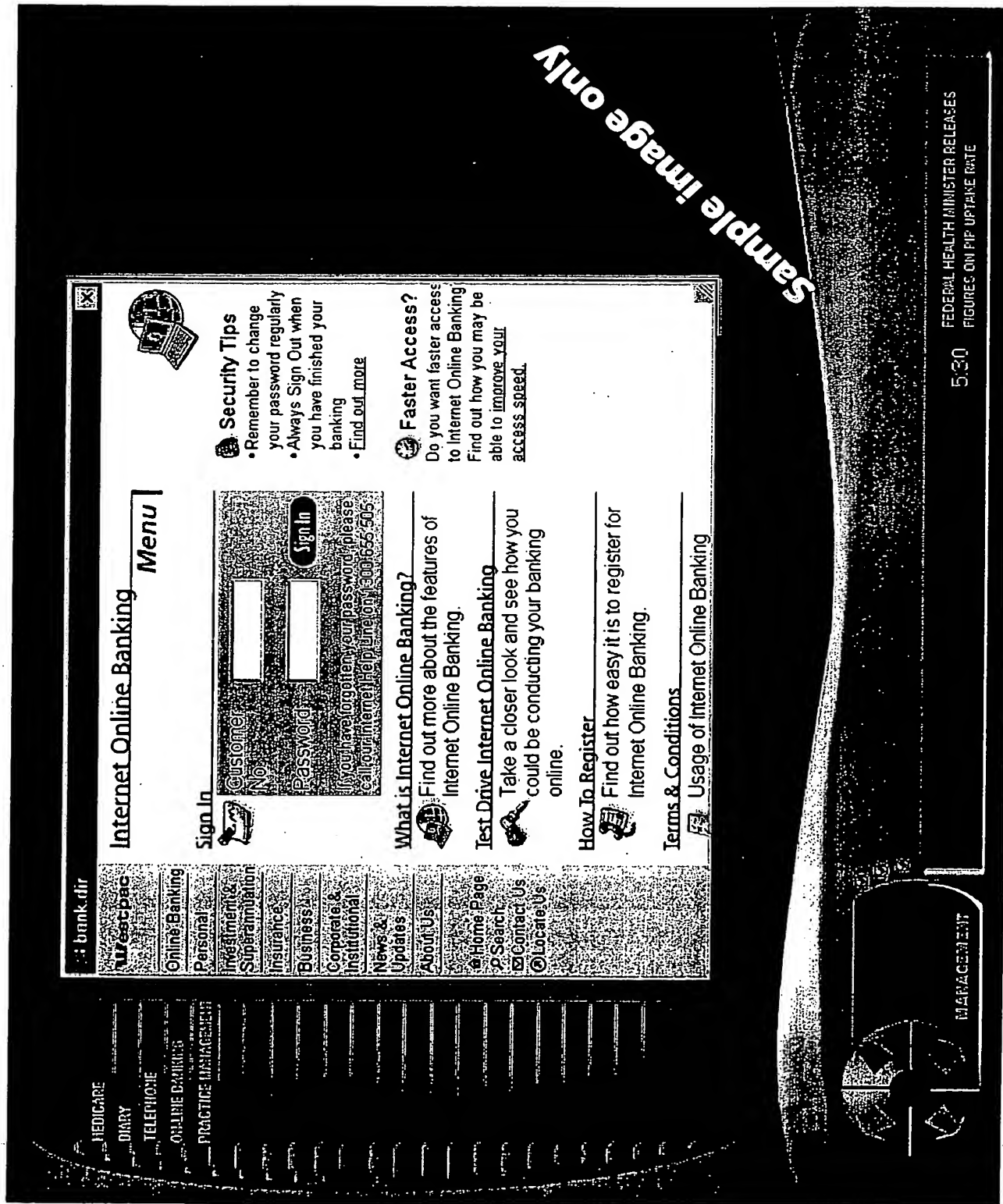




# Dr.Connect Interface

## Example of other interface function

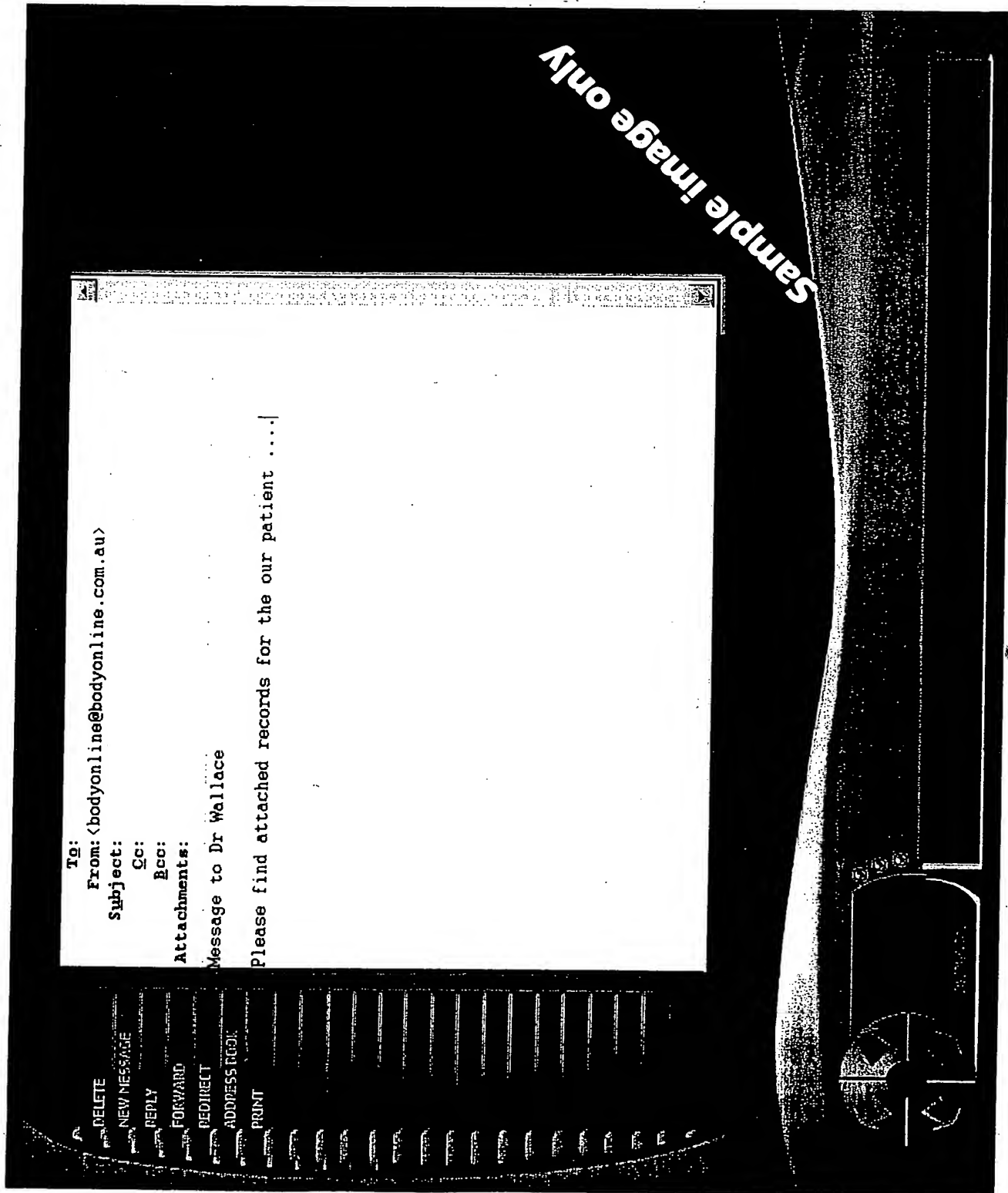
FIG. 2(d)



# Dr.Connect Interface

## Example of other interface function

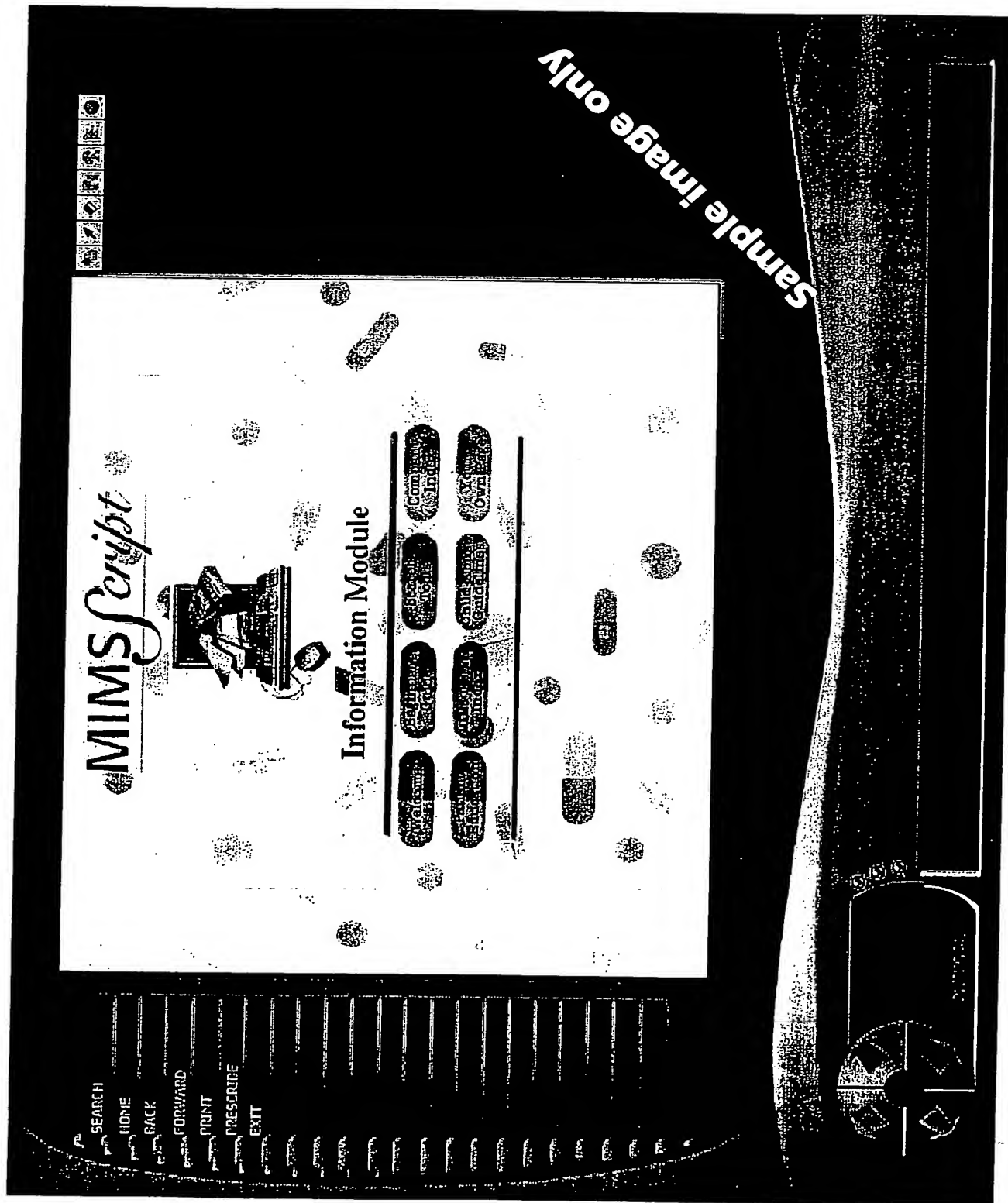
FIG. 2(e)



# Dr.Connect Interface

## Example of other interface function

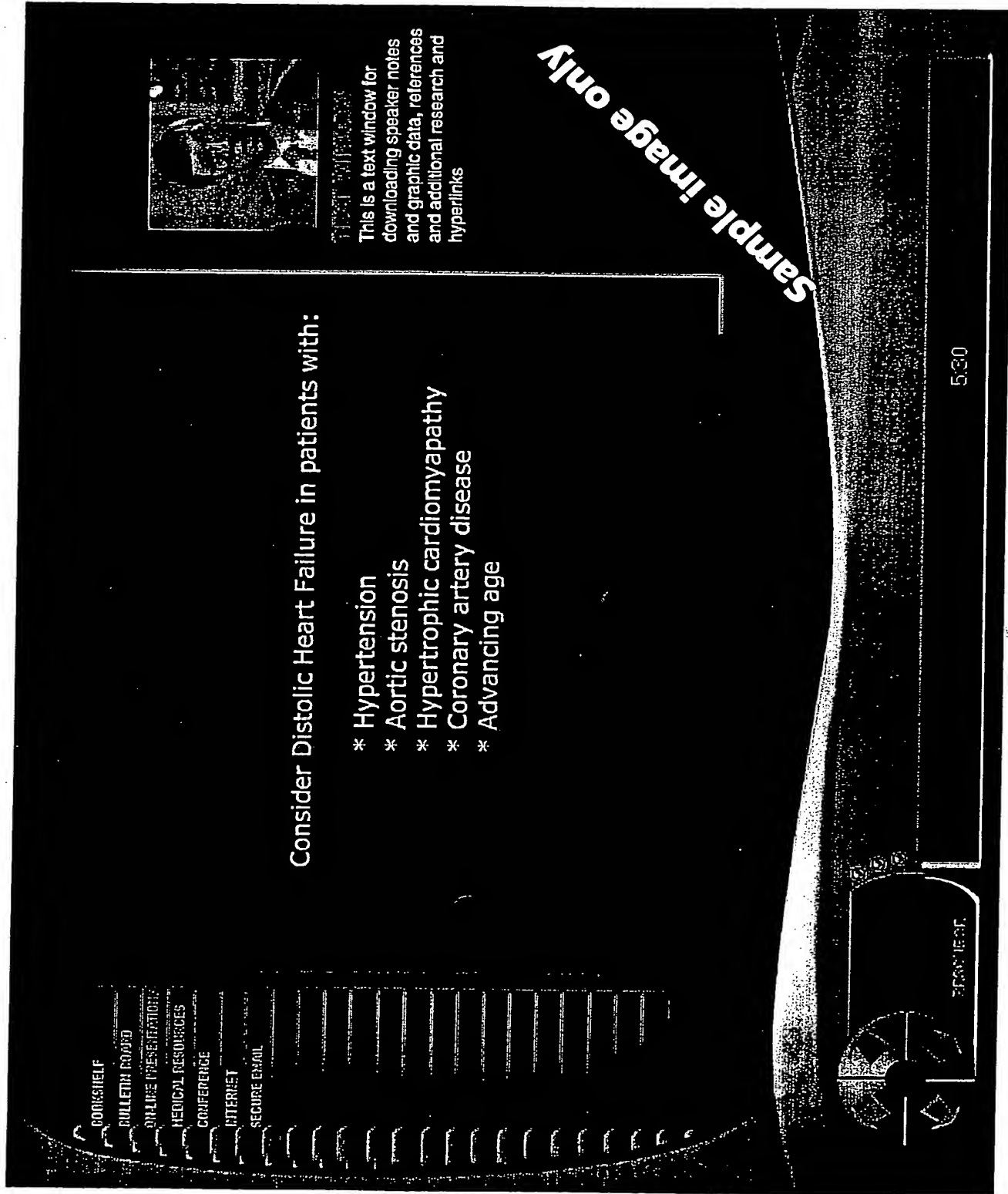
FIG. 2(f)



# Dr.Connect Interface

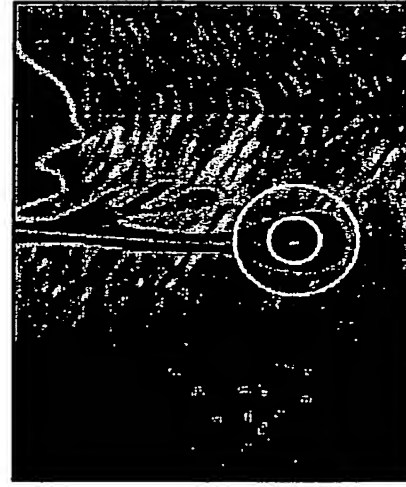
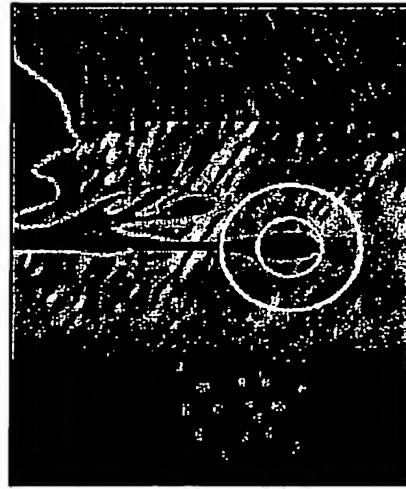
## Example of other interface function

FIG. 2(g)



# Dr.Connect Interface

Example of series of images showing treatment on hair follicle



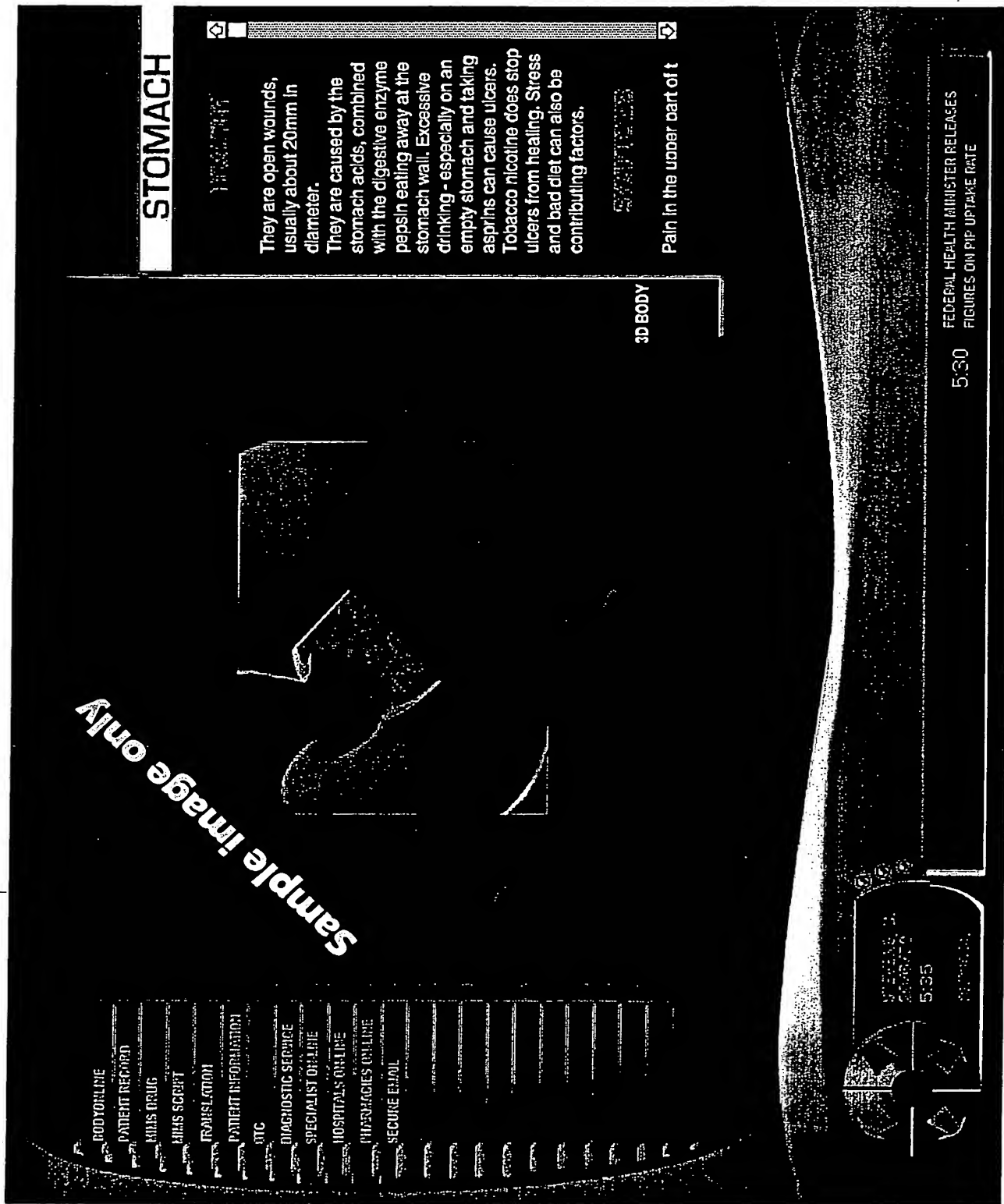
Sample images only

FIG. 2(h)

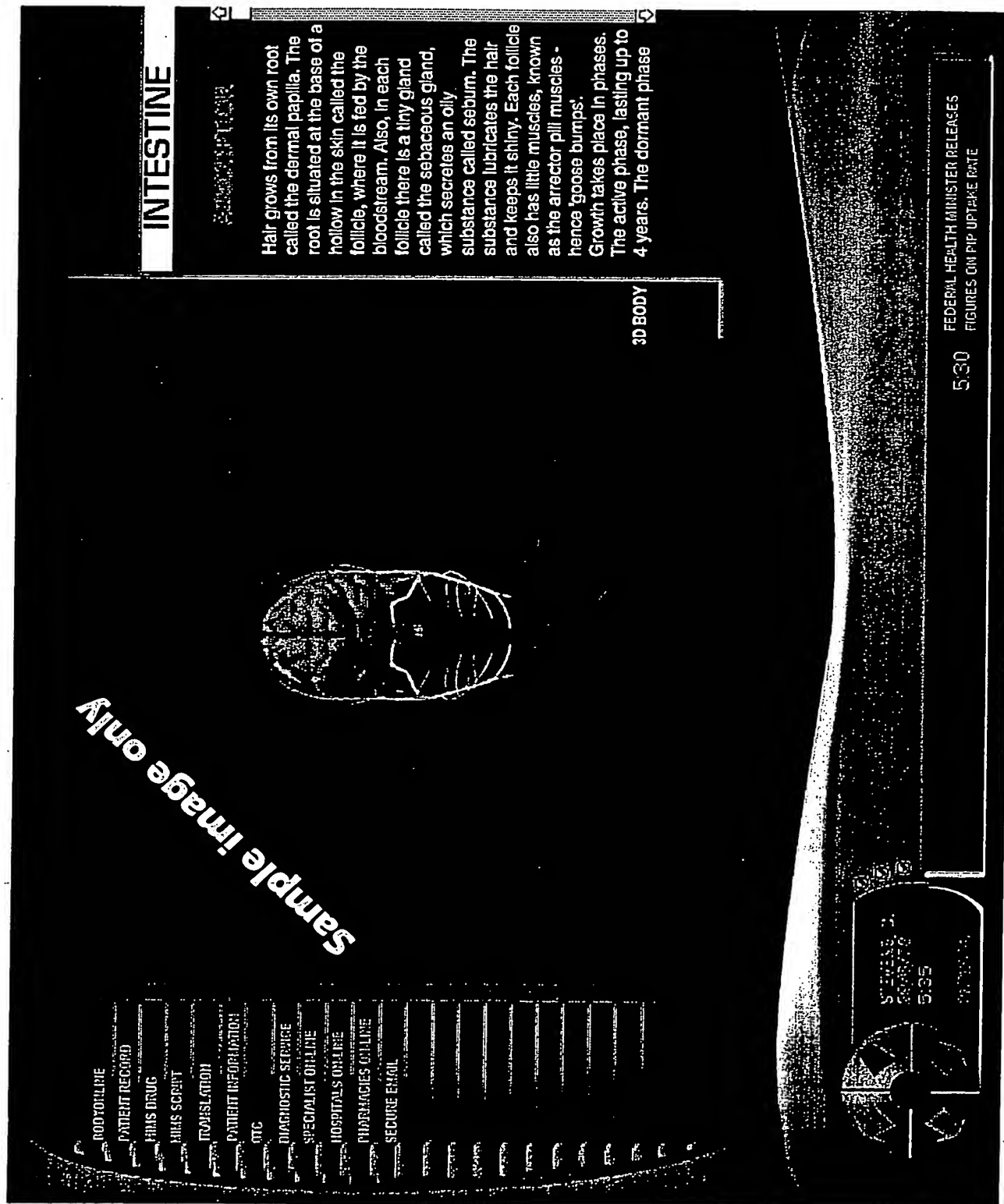
# Dr.Connect Interface

## Sample BodyOnline Image

FIG. 2(i)



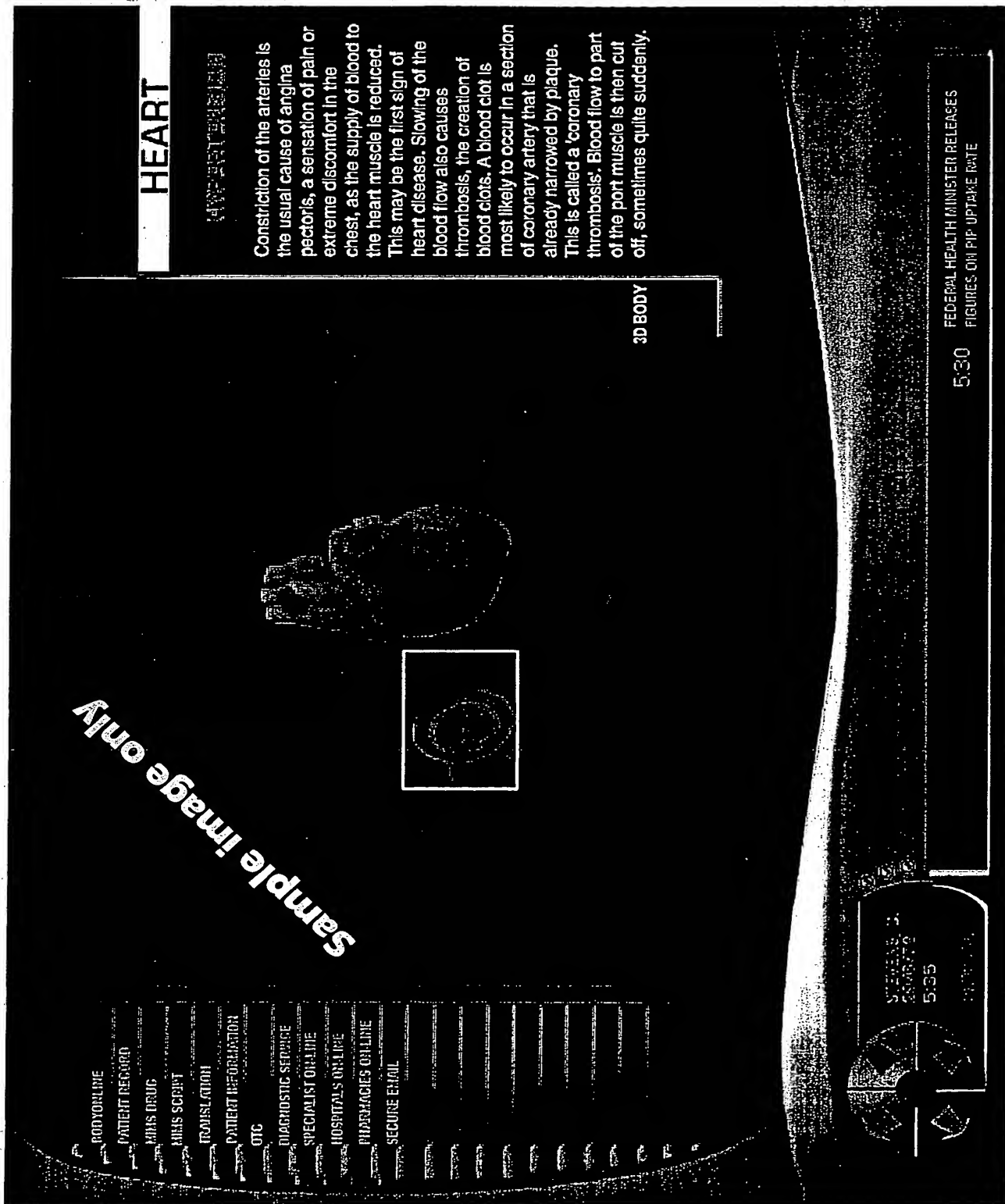
## FIG. 2(j)



# Dr.Connect Interface

## Sample BodyOnline Image

FIG. 2(k)

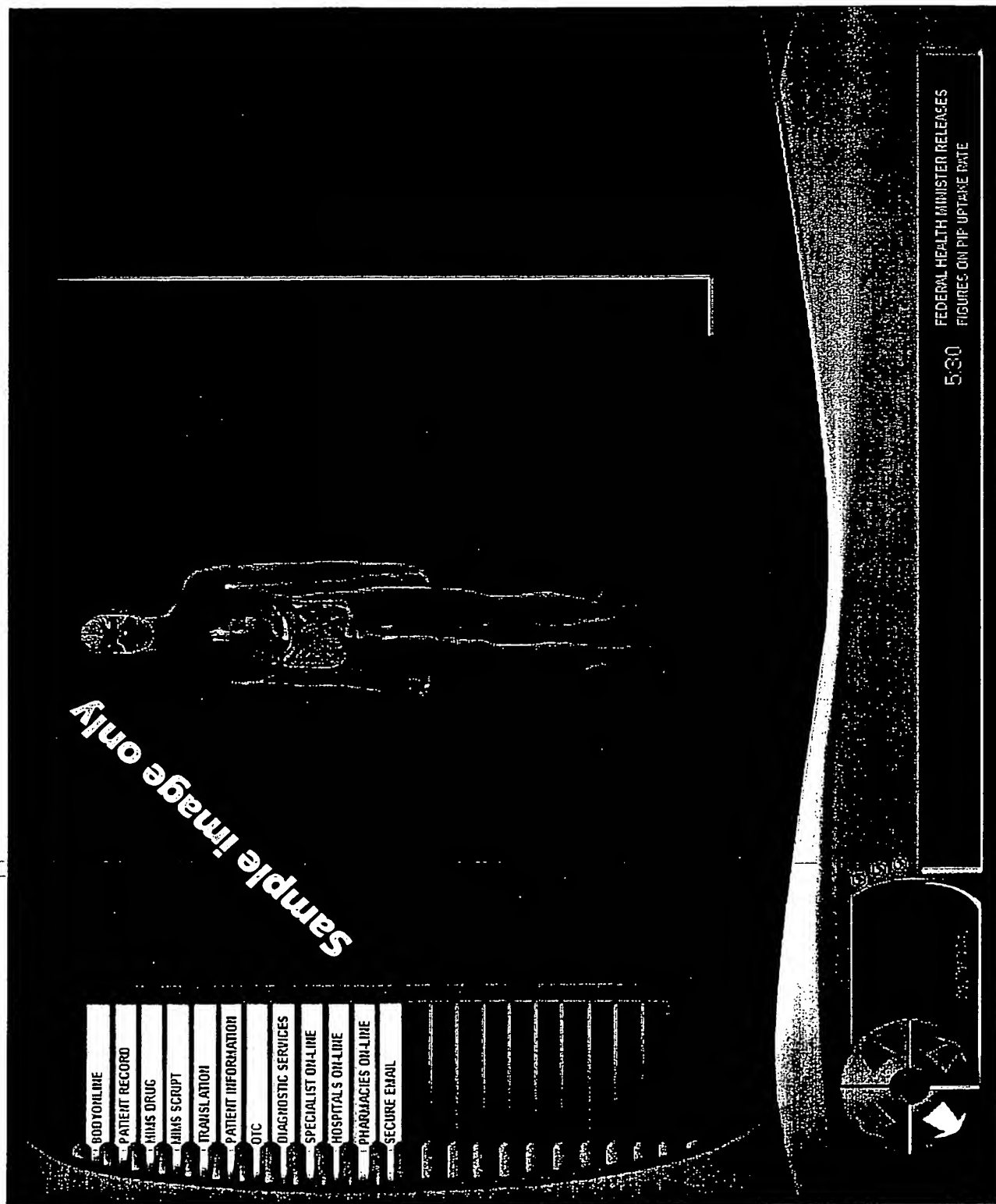




# Dr.Connect Interface

## Screen Shots of 'Clinical' Buttons

FIG. 2(1)



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